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Perspective Chapter: Fallout from the Pandemic – A Social and Psychological Description of COVID-19 Related Traumatic Sequelae

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Abstract

Pandemics are not new phenomena in human history but in a globalised and interconnected planet the differential impact upon each generation may be distinctive. The concept of trauma has been widely discussed over the last 18 months with emphasis on a collective stress and distress but also in respect of those who are vulnerable to psychological adversity because of established prior mental health diagnoses. Much debate has centred on the impact of the pandemic on mental illness, both new and established, and this chapter will examine the utility of interpreting the psychological outcome at individual and societal level through the lens of collective trauma. At risk populations, such as healthcare workers and those recovering from infection will be a special focus of this chapter.

Keywords: trauma, stress, healthcare workers, elderly, youth

1. Introduction

Arguably the COVID-19 pandemic is the first mass trauma-laden event the world has witnessed since the second World War, and for many people it has been the first collective trauma in living memory. There has been a plethora of discussion about the impact of the pandemic, much of which has focussed on the economic and political fallout and it is no exaggeration to state that global pandemics are heart-breaking biopsychosocial health crises. There has also been debate and speculation about the implications of the pandemic on people's mental health, with many commentators citing increased levels of depression and anxiety [1]. Such psychological adversity has more often than not, been attributed to the social isolation and the heightened levels of stress which people have incurred during the pandemic—not least the fact that all it has taken for so many of our habits to be swept away and their shaky foundations revealed, has been an unseen virus. Less has been spoken about the concept of trauma and the longer-lasting implications which mass trauma can yield in the aftermath of this catastrophe. Trauma has traditionally been perceived as a once-off event albeit one which caused extreme stress and distress to the affected individual, for example road traffic accidents or assaults on one's

person. Indeed, when one thinks of the term pandemic, “trauma” is perhaps not the first term that springs to mind but the pandemic has not been a brief, once-off incident, confined to a particular geographic area or a discrete population. Rather, it has spanned many months and had no regard for social, geographical or political boundaries. In this chapter the authors will propose that the pandemic has in fact constituted a mass trauma, whereby millions of people have been affected by the same event within a shared time frame, with virtually no corner of the earth escaping completely unscathed. We believe that long after this pandemic has ended and people have returned to their normal ways of life, the psychosocial impact of this mass trauma will have physical and mental health implications for many citizens around the world. In anticipation of the fallout from this trauma, it is paramount to consider how we may start to adapt. In order to do so, we will reflect on previous mass traumas and explore what we know about the long-term sequelae of trauma.

Trauma may be defined as a ‘rupture in meaning-making’ [2], in that traumatic events can shatter our pre-existing ways of thinking, our belief systems and how we relate to the world around us. When a traumatic event occurs, we are forced to re-evaluate how we view ourselves, others and the world and it is said that a cleft emerges between what we know (our “orienting systems”) and the trauma. It can seem as if there are two selves; the one before trauma and the one after the trauma. A new process of meaning-making, where we evaluate our beliefs and sense of self, is required so that we may progress beyond the trauma.

When one considers who has been adversely affected by the pandemic, healthcare workers in the so-called front line against the virus spring to mind first and foremost. There is no doubt that large numbers of healthcare staff were subjected to increased levels of distress amidst the pandemic. Increased caseload numbers, longer working hours, inadequate PPE supplies, fear of contracting and spreading the virus and moral injury are just a few of the challenges faced by those working in the health sector during this time. Couple these challenges with the well-established fact that healthcare professions experience higher levels of work-related stress in comparison to the general population, and we have a perfect storm for a mental health crisis among healthcare professions. We know that a sense of helplessness in the situation increases the likelihood of a stressful experience becoming a traumatic experience. We may argue that healthcare professionals differed somewhat from the general population in that they may not necessarily have felt helpless; they were on the front line, battling the virus in a very tangible “hands on deck” way, as opposed to the many millions who were asked to help by virtue of staying home and staying away from others. We should also keep in mind that trauma is not necessarily proportional to the intensity of the event: it is possible that a person who nursed patients with COVID-19 on a daily basis may feel less traumatised than a person who had no contact whatsoever with patients afflicted by COVID. The key mediator here is resilience, and its role in the processing, or “meaning-making” should not be understated. There is no doubt that an essential element to the healing process will be the nurturing of mental resilience.

2. Inherent trauma of death itself

Grief is defined as an internal experience in reaction to the loss of something loved and valued [3]. Though commonly viewed as an emotive or psychological response; grief has numerous manifestations - physical, cognitive, behavioural, social and spiritual. Grief is often referred to as the loss of a person due to death; however, grief involves the concept of loss in general which can also refer to the loss of a job, a relationship or even a role. COVID 19 and its associated impact has caused devastating loss and thus grief in so many aspects of our lives.

Grief is a process and this process often begins prior to loss, it is at times preparatory and anticipatory. Due to the unpredictable course of COVID 19 illness, many deaths were sudden and grossly unexpected. This complicated individuals' grief process and eliminated the preparatory process. The suddenness and abrupt nature of death, after what presented itself as an initial recovery and then rapid deterioration at day 10 or 11 of the illness, prevented the natural acceptance which can be afforded to loved ones when a patient is dying of a more predictable and widely understood illness.

Loss of a loved one is unfortunately a natural, universally experienced life event, and at the same time, among life's most deeply challenging experiences. Although any death of a loved one can be emotionally devastating, unexpected deaths provoke particularly strong responses, given there is less time to prepare for and adapt to the loss [4].

Research has demonstrated that the bereavement period is associated with elevated risk for the onset of a multitude of psychiatric disorders, consistently across the individual's life course and coincident with the experience of the loved one's death [5]. This is demonstrated in clinical practice, where death of a loved one often precipitates an individual's referral presentation to psychiatric services. Feeling vulnerable is an immensely difficult for many people, and there is no greater vulnerability than being faced with the transience of life itself.

The unexpected or sudden death of a loved one is frequently cited as the most severe and potentially traumatic experience in one's life, even among individuals with a high burden of lifetime stressful experiences. Unexpected bereavement is associated with heightened vulnerability for the onset of virtually all commonly-occurring psychiatric disorders.

Irrespective of culture, religion or value system, death is usually followed by a funeral or a mourning service. Such a service provides an outlet for the culturally accepted expression of loss-related emotions and marks a transition in which the certainty of the death is emphasised. It provides a starting point for recovery, processing and adjustment following a bereavement. In an attempt to slow the spread of the COVID 19 virus worldwide, lockdown restrictions were introduced of varying intensity. Significant restrictions on the mourning rituals, such as limits on the number of individuals permitted to attend funerals, has the potential in the author's opinion to hinder the grieving process and deny families the opportunity to express their grief. Bereaved individuals tend to perceive different aspects of the funeral in a positive regard [6]. People do not only respond positively initially but continue to reflect on the funeral with positive regard in the future, even years later. The restrictions on funeral and mourning proceedings and indeed household visits in the initial grief period likely denied individuals this facilitatory event of the support of loved ones and their wider community, and undoubtedly compounded their grief. It remains to be seen what, if any, will be the longer-term impact of such restrictions on those bereaved by COVID-19.

3. Trauma of the patients who contracted COVID-19

A person's experience of illness is highly individual and somewhat dictated by the illness-related information they receive. Due to the fact that COVID-19 is a novel virus that is relatively poorly understood, the information available to patients regarding illness trajectory, prognosis and long-term effects is scarce. The lack of information and uncertainty surrounding this illness, may unsurprisingly foster a sense of fear and anxiety in the COVID-infected individual.

A prominent and rather distressing symptom of COVID-19 is dyspnoea or breathlessness. It is widely appreciated that shortness of breath can constitute both a symptom of and precipitant to panic. Anxiety is noted to be an emotional response to breathlessness, but it also increases the perception of breathlessness. There is a strong association between experiencing respiratory symptoms and psychological distress which is further worsened by the uncertainty of disease progression and indeed the exact underlying pathology causing said breathlessness [7].

Uncertainty and the unknown are themes that underpin the global experience of COVID-19. The clinical understanding of the illness is continually evolving and changing in parallel with epidemiological research which is informed by the natural evolution of the pandemic among a human population. Clinicians play an important role in helping their patients to use coping skills for managing the illness, the different phases of infection and residual symptoms. However, clinicians' lack of knowledge about the illness trajectory results in doctors being unable to advise their patients as they would with other disorders or conditions. The impact of this inability of doctors to sufficiently counsel their patients about the disease is likely to be twofold: traumatic for the patient who seeks information about a hitherto unknown illness, and traumatising for the doctor who wants to help, but is limited in the extent to which he or she can do so.

We should also consider that there is exaggerated fear related to infectious illness compared to non-infectious illnesses. Infection possesses unique characteristics that account for this disproportionate degree of fear: it is transmitted rapidly and invisibly; historically, it has accounted for major morbidity and mortality; older forms or strains re-emerge and new forms emerge. By the time the Spanish flu had run its course in 1920, the pandemic had infected over a quarter of the world's population and resulted in some 30 million to 100 million deaths. In comparison to this, the two World Wars are estimated to have killed roughly 77 million combined [8]. Infectious diseases completely consume us: the media and society become enthralled and fascinated, which results in minimal escape for the individual. Infectious illnesses are unique in that the patient is both a victim and a vector; the latter of which may be associated with feelings of guilt and responsibility. Infectious diseases are well documented throughout history and their devastating impact has resulted in more acute deaths than any other pathology [9]. As such, an automatic fear of infection is engraved in our subconscious.

The psychological response to the threat of infection has been well researched with regards to both acute outbreaks such as SARS and more gradually evolving pandemics such as HIV/AIDS. Anxiety extends beyond the physical consequences of infection, to social consequences such as stigmatisation, which, in the case of the current pandemic, manifested itself as anti-Chinese racism which anecdotally have emerged during this pandemic. In the case of an unknown agent such as COVID-19, a complete lack of preparedness on the part of medical authorities and misleading information perpetuated by the media serves to further aggravate pathological psychological responses to illness and infection [9].

4. Fear of the unknown/anticipatory fear

COVID-19 proved to be a highly virulent and transmissible infection which has caused panic in individuals and anticipatory anxiety regarding the contraction of infection by this novel virus. Fear is an appropriate and adaptive response in the presence of threat and danger. Fear enables us to engage in safety behaviours in order to mitigate threat and protect ourselves. Fear is also protective and with COVID 19, the threat is uncertain and continuous and as such the fear may

become persistent and negatively impact our collective quality of life. The threat from COVID 19 is universal with each individual being at risk. This high personal relevance and has heightened our subjective experience of fear [10].

Uncertainty surrounding a possible future or continuous threat also potentially disrupts one's ability to avoid it or to mitigate its negative impact, and thus results in anticipatory anxiety. Elevated expectations of threat naturally lead to avoidance of situations involving uncertainty and the said threat. However, as the threat from COVID-19 was ubiquitous and present in many aspects of our lives, people were forced to adjust and adapt to living with constant threat. This excessive threat has triggered a response of anticipatory fear. The fear of contracting the virus has led to excessive concern over physiological symptoms, significant stress about personal and occupational loss, increased reassurance- and safety-seeking behaviours, and avoidance of public places and situations, culminating in a marked impairment in our levels of functioning [11].

Epidemic psychology demonstrates that the human brain is pre-wired to thrive on certainty and has a disdain for uncertainty, which represents danger, stability being at the core of humans' schema and derivation of meaning from life [12]. The crisis of COVID-19 disturbs our set system and questions the certainty to which we were habituated. The perplexity surrounding the origin of the virus and the associated and prolonged uncertainties give rise to fear of the unknown, which is becoming a new feature of human existence. This disruption to our stability necessitates and indeed forces us to alter our ways and develop novel coping mechanisms. Paradoxically COVID-19 encapsulates two of our innate fears, fear of uncertainty and fear of death; the latter being life's great certainty. Fear of the unknown appears to be inherent, evolutionarily-derived and a logical reduction of higher order constructs. Fear of the unknown is defensibly a fundamental fear; one which has been immeasurably amplified at a population level by COVID-19 [13]. Perhaps as we journey through this pandemic and learn more about the virus, fear of the unknown may transmute into a fear of the known, the latter of which may prove to be more manageable and less traumatising.

5. The impact of COVID-19 on healthcare workers

The analogy of the COVID-19 pandemic as a kind of global war is now very familiar, with the frontline medical staff akin to foot soldiers in the trenches, fighting back against a voracious, viral enemy. Much has been written about the challenges facing healthcare workers in the midst of this pandemic: extended working hours, risk of exposure to the virus, fear of transmitting the virus to family members, insufficient supplies of personal protective equipment, adaptation to new work practices and changing roles, to name but a few. In addition to such practical challenges facing healthcare workers during the pandemic, a vast array of workers has been faced with emotionally fraught, moral and ethical dilemmas. Immeasurable moral injury may have occurred as healthcare workers have been forced to make difficult decisions regarding resource allocation, something which most workers likely never anticipated having to face.

Also worthy of consideration are the feelings of fear and guilt which may arise following infection with the virus. In light of the fact that countless frontline workers contracted the virus in the course of their work, it is plausible that many of these workers grappled with self-blame and a sense of shame about having become infected. Tragically, such feelings, coupled with heavy stress and fear of having contaminated others, are thought to have resulted in the suicides of a number of healthcare workers. Indeed, Reger and colleagues have discussed the possibility of

suicide rates increasing across the general population, in the aftermath of the pandemic: they caution that a surge in suicides may occur among people who struggle to cope with the realities of the pandemic [14]. Coupled with the fact that in 2018, the U.S. had its highest age-adjusted suicide rate since 1941, it is not difficult to imagine that the personal and interpersonal struggles presented by the pandemic could exacerbate the situation. It could be argued that frontline working bestows an even higher risk, given the vicarious trauma which many of these workers have sustained.

Notwithstanding these considerations, there is at least some cause for hope: there has been a decrease in suicide rates in the short-term aftermath of previous national disasters, such as the 11th September terrorist attacks [15], although the data on longer-term effects is, admittedly, somewhat mixed. The “pulling-together” effect, wherein members of society have a shared experience of testing times and learn to support each other through their difficulties, is one hypothesis for the downward trend in suicide after national disasters. In addition, a pandemic may give pause for thought and reflection on our mortality, and force us to consider how precious life is, and as a result, possibly make suicide less likely. However, a word of caution: history has taught us that the impact of outbreaks on suicide rates tends to be a negative one. Although there is little data regarding the previous pandemic of Spanish Flu (1918), the general consensus is that suicide rates increased at that time. More recent data following the SARS epidemic showed an increase in the suicide rate of older adults in Hong Kong in 2003, a 31.7% increase from 2002 [16, 17].

The mantra of “we’re all in this together” was quickly adopted in order to inspire a sense of community in the fight against the virus. This well-meaning drive to foster a sense of community would chime with Emile Durkheim’s [18] seminal work on the theory of suicide, which postulated that linking suicide almost exclusively with mental illness, and effectively ignoring social connectedness, was inadequate. He linked a rise in suicides at the time to modernity and the associated weakening of family and community bonds, and ultimately asserted that as social integration decreases, people are more likely to die by suicide. In this time of social and physical distancing, it is not difficult to comprehend how people could feel less socially connected and perceive themselves as being more alone than ever before [19], meaning that a rise in suicides is a very real possibility.

On the other hand, a pandemic is not the same as a natural disaster or an act of terror. Although comparative in terms of the mass loss of life and the sense of a loss of control, a pandemic contrasts with manmade or natural disasters in terms of the duration and magnitude of the event; a pandemic is a prolonged crisis, and it is known that prolonged stressors can be especially challenging to adapt to [20]. However, it is not beyond the capabilities of the human condition to overcome unimaginable suffering: Viktor Frankl’s account of life and the search for meaning in a Nazi concentration camp springs to mind as a shining example of human courage in the face of difficulty and suffering [21]. This pandemic has given rise to levels of unemployment not seen for decades, and it is widely anticipated to result in a global economic downturn. It is known that rates of suicide tend to increase during periods of recession [22]: it was estimated that a 22.8% increase in suicide occurred in the United States during the Great Depression of 1929–1933 [23]. Similarly, following the Asian economic crisis of 1997–1998, male suicide rates soared by 39% in Japan, 44% in Hong Kong and 45% in South Korea from 1997 to 1998 [24]. More recently, Irish data found that by the end of 2012, the suicide rate for men was 57% higher than if the pre-recession trend had continued [25], while self-harm rates were 31% higher for males and females. Of note, Stuckler [26] found that countries with the most severe economic downturns had the greatest increase in suicides, while countries such as Austria, with strong social support structures and protective

labour markets, had a net decrease in deaths by suicide. It remains to be seen what the impact of this economic downturn will be on suicide rates.

We know that, for many of us, our job plays a key role in our identity and sense of self. Consider being dismissed from a job or unexpectedly losing a job: most people would consider either of these events upsetting at best, traumatic at worst, and there is a real risk to mental well-being involved. One study showed that long-term (more than 52 weeks) unemployment was significantly correlated with large negative effects on mental health, with even greater effect sizes observed in minority groups [27]. Having a job fosters self-confidence, and, for many, inspires a sense of purpose. Many healthcare workers will say they entered the field of health in order to help others in a real and meaningful way. If trauma is a rupture in “meaning-making” [2], then the pandemic was perhaps the greatest rupture these healthcare workers will witness in their careers: the way they viewed themselves, the world, and others was overturned by this frightening event which was unprecedented in living memory. The concern is that a gap has now arisen between what these workers knew, or their “orienting systems”, and the traumatic event. As we emerge gradually from the pandemic and healthcare workers have some time to reflect on their experiences, some will undoubtedly process events, harness their resilience, and move past the trauma. Others will likely struggle to process the magnitude of what they have experienced amidst the pandemic, and are at risk of developing mental health difficulties.

In attempting to plan adequately for the increased need for mental health supports for healthcare workers in the aftermath of this pandemic, we should regard it as inevitable that an increase in mental health needs will arise. We need only look to the outcomes for healthcare workers who have worked through previous, smaller outbreaks. One study [28] found that more than three-quarters of healthcare workers who cared for patients during the SARS outbreak reported experiencing mental health difficulties, such as sleep disturbance, anxiety and low mood. Various authors have lamented the paucity of training in mental health care delivery for healthcare professionals in the context of working in a pandemic [29]. Others have argued that it is imperative that healthcare managers take steps to protect the mental health of their staff and to correctly identify those who suffer psychological injury as a result of the pandemic [30].

Regarding the psychological sequelae to trauma, it is widely accepted that a lack of post-trauma social support and exposure to stressors during recovery constitute the two risk factors which confer the highest risk in terms of long-term mental health status [30]. On a positive note, we know that healthcare managers can play an instrumental role influencing the experience of workers, in that they can foster a supportive environment for workers and take steps to reduce workplace stressors following the acute crisis period. Once again, history has taught us that supportive managers can have a powerful effect on the mental well-being of their staff, as demonstrated in research from previous outbreaks [31].

Greenberg discusses six elements, based on the best evidence available, which are necessary in the protection of healthcare workers’ mental health [30]. Firstly, it is felt that healthcare workers should be thanked, because resilience is thought to be nurtured through an appropriate acknowledgement of the difficult work carried out by frontline workers. Greenberg suggests that potential psychological and emotional issues should be acknowledged and information should be forthcoming as regards support options which are available to healthcare workers. Secondly, it is advised that healthcare workers who are absent from work be actively followed up by managers. Given that avoidance is a cardinal symptom of traumatic stress, this may manifest as being absent from work. Healthcare managers should engage with workers who have unplanned absences from work, in order to ascertain if the

workers are experiencing mental health difficulties and to facilitate signposting to appropriate support services. Thirdly, the case is made for “return to normal work” interviews, as healthcare workers journey from crisis roles back to the “new normal”. Such meetings should facilitate a supportive conversation regarding mental health needs, and should be conducted by managers who are experienced in and comfortable with speaking about mental health needs. Research in trauma-exposed occupations has demonstrated that workplace mental health training of managers can reduce employee sick leave [32].

In addition, Greenberg argues that healthcare managers ought to be particularly cognisant of the potential mental health needs of healthcare workers who belong to high-risk groups, including black, Asian and ethnic minority people, as well as junior or inexperienced staff [30]. The identification of ongoing stressors, such as bereavement, is of paramount importance. There is also a need for special focus on those healthcare workers who have taken on roles and responsibilities beyond their usual role, e.g. workers who were redeployed to novel roles.

The UK National Institute for Health and Care Excellence endorses the active monitoring of anyone who has experienced a potentially traumatic event, especially those who are already considered to be at increased risk of mental health difficulties. In the aftermath of the 2005 London bombings, Brewin and colleagues demonstrated that proactively reaching out to people about their mental health can result in an increased take-up of mental health care [33].

Healthcare workers being able to make sense of and derive meaning from their traumatic pandemic experiences is the final piece in the puzzle of protecting their mental health. It is widely believed that it is not events per se have the most significant impact on our coping, but rather how we think about, interpret and perceive events and ascribe them a meaning [20]. Healthcare managers should strive to assist workers in developing a meaningful narrative of their experiences, one that does not apportion blame to the self or others for the distressing challenges they faced amidst the pandemic. Schwartz rounds and Balint groups are two methods by which healthcare workers may process the trauma they have experienced and foster a sense of purpose. After all, oft-quoted in the words of the Friedrich Nietzsche, “he who has a why to live for can bear almost any how”.

6. Older people and COVID-19

During the COVID-19 pandemic, older adults have been considered a high-risk group. As such, they became a focus of government guidelines and regulations concerning their day-to-day living, which has undoubtedly impacted significantly on their quality of life. Although COVID-19 is a physical health crisis, within it lies the core precipitating factors for a mental health crisis [34]. It has been suggested that the measures taken by government in relation to social distancing and isolation or ‘cocooning’, especially targeting groups at risk including older adults, can result in social isolation and indeed loneliness. The latter variables are known to decrease psychological well-being and increase the risk for depression and cognitive dysfunction [35].

COVID-19 has disproportionately affected older people all over the world with utterly devastating consequences. An analysis of confirmed deaths by the Central Statistics Office in Ireland has shown that COVID-19 has had the greatest impact on people aged 65 or over. This age group accounted for almost 92% of confirmed deaths between 11th March to 15th May 2020, while similar trends have been observed in other countries.

People aged 70 and over were instructed to stay indoors, avoid all social visits from friends and family, and largely avoid outdoor exercise – activities that are vital to everyday routine and indeed quality of life. Social interaction, physical activity and behavioural activation are heavily encouraged for older people to ensure psychological and physical well-being and suddenly this was curtailed in many societies with no knowledge or certainty of time frame as to when these restrictions would be lifted and a sense of normality could return. Older adults with regular social interaction demonstrate greater psychological well-being and life satisfaction [35]. The pandemic robbed older adults of this opportunity and, consequently, perpetuated the loneliness and social isolation which older adults often experience and feel.

Socioemotional selectivity theory, a life-span theory of motivation which maintains that age differences in goals results from shrinking time horizons, is an area of interest when considering the importance of social connections in older adults. It proposes that older adults use their social network as a buffer against negative experiences [36]. Earlier in life, physical and mental health are strongly interconnected; however, as we age this association is weakened [36]. As physical health declines, subjective well-being is maintained which may be conceived as ‘a paradox of aging’. Older adults place emphasis on emotional well-being and their relationships as a maintaining factor in this.

Not only does meaningful social interaction affect emotional and mental well-being, it impacts on physical health and a lack thereof can precipitate a decline in emotional, mental and physical well-being. Psychologists, sociologists, and epidemiologists have contributed significantly to our understanding of how social processes influence physiological processes, going some way towards explaining the link between social interaction and health. Supportive interactions with other individuals benefit immune, endocrine, and cardiovascular functions and reduce allostatic load, which essentially reflects stress on the body due to chronically overstimulated physiological systems engaged in stress responses [36].

Though necessary and understandable, the restrictions and social isolation enforced on vulnerable at-risk groups such as older adults, may further enhance their vulnerabilities by removing their social connections and their associated benefits. Social connections foster cumulative advantages for older adults over time. The direct impact of COVID-19 and the high mortality rate due to physical illness and complications is apparent but what will be the secondary impact on both physical and mental health? This a serious public health concern.

It is easy to presume that as adults age and they experience bereavements, they become somewhat accustomed to it due possibly to habituation and the expectation that we will continue to experience bereavements as we age. However, research has demonstrated that this is not the case [37]. The grieving process of the elderly is not inherently different to that of any other age group and elderly people will require the type of support and assistance afforded to younger persons during times of grieving. Grieving experiences of the elderly is rarely discussed and explored and this is an emerging area of interest [38]. It is, as yet, unclear what the long-term effects of COVID-related bereavements will be on the older generation, the group who likely experienced the greatest number of COVID-related bereavements.

As a group, older adults have been the victims of the majority of deaths due to COVID-19, while also enduring the strictest restrictions vis-à-vis enforced social Isolation. Recent evidence demonstrates the overall death rate from covid-19 has been estimated at 0.66%, rising sharply to 7.8% in people aged over 80 and declining to 0.0016% in children aged 9 and under [39]. Older adults know that they are

more vulnerable to death and disability due to COVID-19 than their younger counterparts and that the treatments for COVID-19 are currently rather limited [40].

Older adults have lost loved ones and have not been afforded the opportunity to grieve with support. Moreover, older adults experience anticipatory anxiety and fear of contracting COVID-19 as through public messaging they are all too aware of the possible eventualities should they contract the virus. This anxiety related to fear of death was termed *thanatophobia* by Sigmund Freud in 1915 in his seminal essays titled: *Thoughts for the Time on War and Death*. Freud believed this to be related to one's unconscious belief in one's own immortality. Death anxiety is a universal and inherent phenomenon, which affects all humans to varying degrees. For the elderly, their fears are based in the actual process of dying and how they will experience dying, rather than death itself where there is thought to be some level of acceptance as regards the transience of life and the inevitability of death [38]. This fear is enhanced by COVID-19 as the illness trajectory of the virus is uncertain and unpredictable, with some individuals recovering after a mild illness and others losing their lives rather suddenly after contracting the virus.

On a practical level, this pandemic has upset the lives of older adults in immeasurable ways, given their reliance on external supports. Due to physiological effects of ageing, worsening mobility and the presence of chronic illnesses, many older adults rely on home help, carers and community services for their activities of daily living [41]. Many such services were either reduced or suspended during the peaks of the pandemic. These support services experienced new, substantial challenges in order to maintain services while keeping clients and aides safe from COVID-19 [42]. This disproportionately affects elderly individuals, whose sole social contact may be outside of the home, such as day care venues, community centres, and places of worship. Those who lack close family or friends, and rely on the support of voluntary services or social care, were placed at additional risk of social isolation, as these people may already be lonely, isolated, or secluded. Unfortunately, older adults are anecdotally less accustomed to and involved in the online world of social media and communications. Older adults have experienced difficulties with telecommunications; telephone interaction has not been favourable given the hearing impairment of some older and challenges in engaging individuals and building rapport [43]. Online technologies and resources could be harnessed to provide social support networks and promote future inclusivity for older adults [44].

The traumatic effects of COVID 19 on older adults have been acute, chronic and considerably complex. Older people are the age cohort most at risk of severe physical illness and death. They have been faced with the trauma of death and dying, including vicarious trauma experienced due to the death of their loved ones. They have been under the most severe of restrictions, while services and supports on which they heavily rely have been reduced and suspended.

At the outset of this pandemic, older people and those with pre-established medical conditions were felt to be the most vulnerable to infection with COVID-19. Communal care settings were especially blighted with high disease and mortality rates. The physical and psychological deconditioning and disengagement due to the pandemic and its associated fear will be hard to counteract in this age group. Older people have the least available time of any to recover despite their inherent resilience and life experience. The needs of older adults, and the consequences if these needs are not met, should be strongly considered in public health recommendations and service provision. The negative psychological and social aftermath of the COVID-19 pandemic is playing out and will continually unfold and older people may once again be over-represented in terms of its' detrimental impact.

7. Young people and COVID-19

Young people may have escaped the pandemic relatively unscathed in terms of serious physical health sequelae of COVID-19, given that they were substantially less likely to be afflicted by severe illness, but the same cannot be assumed regarding young people's social and emotional well-being. Children are more sensitive (e.g. to news reports on TV) and may develop a view of the world that it is a terrifying place to be. They may witness their parents struggling to cope, and this could reinforce their view of the world as a frightening place. In the longer term, this can colour or cloud the lens through which they view the world. The babies born during the pandemic experienced a lack of socialisation- have they missed critical periods of social and emotional development?

It is well established that adolescence is a stage of life wherein there is a heightened need for peer interaction, and emphasis is placed on social stimuli [45]. The severity and gravity of the COVID-19 situation forced many countries to implement strict public health measures such as physical distancing, self-isolation, school closures, and suspension of most sporting and other recreational activities, resulting in unprecedented levels of social disconnection by effectively precluding young people from engaging in face-to-face contact outside the realm of their own household or social bubble. Many young people missed out on life events which typically punctuate the adolescent and young adult periods of the life span, the so-called "coming of age" events such as school-leaving examinations and graduation ceremonies. Others embarked on their third level educations in a radically-changed educational environment, where online teaching prevailed in lieu of in-person lectures, and students were required to stay at home rather than move into their campus accommodation.

It is not yet known what longer-term social and emotional effects the pandemic may herald for our young people. It may be the case that social deprivation and physical isolation from peers will have a lasting impact on the psyche of young people: research has demonstrated that peer acceptance and peer influence are of paramount importance during adolescence. Indeed, animal studies have even demonstrated that social isolation and deprivation in adolescence can give rise to unique effects on brain and behaviour, in comparison to other stages in the lifespan. In highlighting the power of social networks, Jain [46] explains that irrespective of the particular type of trauma a person experiences, early social supports for the person in the aftermath of the trauma can actually prevent the onset of PTSD. Furthermore, for those who develop PTSD, a supportive social network can be instrumental in the healing process. Jain [46] stresses that early optimisation of social support in the wake of traumatic events is now considered excellent treatment. In addition, the person's perception of the support they receive from others is thought to be of utmost importance in terms of protection against developing PTSD.

On the other hand, it may transpire that the trend towards digital platforms of interaction, such as social media, may bestow some level of protection for young people against feelings of social isolation and thereby result in a less damaging effect to their mental well-being. Jain [46] examines the impact of social media technology during times of natural disaster and asks if such technology can be harnessed to bolster the social networks of post-disaster survivors. For example, in 2010, survivors of the Haitian earthquake turned to social media to tell their stories, which in turn rallied the response of the mainstream media to the disaster. Similarly, online communities were established in the wake of hurricane Katrina, providing support for survivors and a space to help process the trauma they had experienced. Of course, there are drawbacks to social media: trolling,

misinformation and privacy concerns, to name just a few. It should also be noted that social media technology is not universally accessible: people of lower socio-economic status are less likely to have the means to access smart phones, tablets, or similar devices. The tragedy is that it is those of lower socioeconomic means who are more likely to be adversely affected by disasters, such as this pandemic, and therefore are perhaps the most needy of support in our society.

A number of rapid cross-sectional surveys have suggested an increased prevalence of anxiety and depression amidst the pandemic, as well as lower levels of well-being. However, Kwong et al. [47] issue a word of caution regarding such rapid surveying of a population: information relating to the participants' pre-pandemic mental health and potential confounding factors, is lacking, thus preventing a comprehensive assessment of whether adverse mental health outcomes arise in those with pre-existing mental health difficulties, or whether those with no previous psychiatric history develop mental health difficulties which are attributable to the pandemic. In an effort to remedy this situation, Kwong and colleagues [47] aimed to quantify the prevalence of depression, anxiety and mental well-being prior to and during the COVID-19 pandemic. Data were compiled from the Avon Longitudinal Study of Parents and Children [ALSPAC] and Generation Scotland cohort. Results showed that the prevalence of depression during the pandemic was similar to pre-pandemic prevalence in the ALSPAC index generation (mean age of 28 years), while the rates of anxiety had increased almost twofold, i.e. 24% in comparison to the pre-pandemic level of 13%. The authors identified young people, women, people with pre-existing mental or physical health difficulties, and those experiencing socioeconomic adversity, as at-risk groups for developing depression and/or anxiety amidst the pandemic, even when controlling for pre-pandemic anxiety and depression. Similar results were found by O'Connor et al. [48], in a study of just over three thousand people, which found that while levels of depression did not change significantly, suicidal ideation increased over time, and anxiety decreased following an initial spike. Subgroup analyses demonstrated that young people (aged 18–29 years), in addition to women, people from socially disadvantaged backgrounds and people with pre-existing mental health difficulties, had worse mental health outcomes during the pandemic. The authors cited the growing rates of suicidal ideation across waves of the pandemic, particularly in young adults, as cause for concern. It is possible that anxiety arises in response to an ongoing threat and sense of uncertainty, whereas the sense of global community and the “all in this together” attitude may bestow some protection against negative self-talk, self-blame and depressive guilt.

In a 2021 survey conducted by a U.K.-based charity for youth mental health, Stem4, it was found that three in five young people reported experiencing mental health difficulties such as anxiety and low mood. The same organisation witnessed an increase of over 1000% in views of its online resources page (which offers advice on matters such as coping skills for anxiety) during the lockdown period, in comparison to pre-lockdown [49]. In a recent Irish qualitative study [50] examining presentations to the paediatric emergency department, clinicians reported that there was an increase in demand for psychological supports for young people during the pandemic. The authors found that overall, the pandemic and the resultant public health restrictions have had a negative impact on the psychosocial well-being of young people. They found that the difficulty in accessing primary care and community services exacerbated the struggle of young people in need of support. There were anecdotal reports that presentations with self-harm had increased and the reduced access to out-patient child and adolescent mental health teams was cited as a possible contributing factor in this regard. The strife of children with neuro-developmental disabilities was also highlighted: the authors highlighted that in the

absence of a structured daily routine and support services such as specialist schools, some children with autism spectrum disorder struggled significantly, culminating in some being brought to the emergency department by their parents, who were struggling to cope with the escalation in their child's challenging behaviour. There is the additional concern that the closure of schools and other community services equated to the loss of safety nets for vulnerable children, who might have otherwise been referred to appropriate support services. Once again, the long-term consequences, if any, of these pandemic-induced challenges are to be elucidated. Perhaps the best course of action at this point would be to implement adequate services for young people as we emerge from the pandemic, with a focus on those services which were insufficiently resourced during the pandemic, such as community-based mental health services.

Finally, there is the question of intergenerational trauma. Although in its infancy, the study of epigenetics seeks to establish if children of traumatised parents have an increased risk of developing similar difficulties to their parents. It is thought that PTSD may alter gene expression in a trauma survivor, and these alterations could then be passed on to the survivor's progeny at a cellular level it being speculated that such epigenetic alterations are passed to the child by "inter-generational transmission" by way of adversely affecting the parents' sperm or egg quality, or by negatively affecting the mother while she is pregnant. Yehuda et al. [51] examined the epigenetics of PTSD by assessing the effect of trauma exposure on the salivary cortisol levels of pregnant women. They found lower cortisol levels in women who were pregnant when they evacuated the World Trade Centre during the 11th September attacks, and this result was replicated in their one-year-old children. In comparison to women who did not develop PTSD in the wake of the terrorist attack, lower cortisol levels were found in mothers who developed PTSD and their infants, with mothers in the third trimester displaying the lowest cortisol levels. It is hypothesised that traumatic stress may alter the expression of an enzyme in the placenta, which in turn, modifies cortisol into an inactive metabolite. Other research has found that pregnant women with PTSD are at increased risk for impaired uterine blood flow, low birth weight babies and prematurity. It has been argued [46] that in-utero exposure to trauma can have adverse effects on the developing foetus. When we consider some of the obstacles which pregnant women faced during this pandemic: hospital visitor restrictions, fear of contracting the illness and uncertainty about vaccination, it is not difficult to imagine how stressful pregnancy was. Only time will tell if the distress and trauma experienced by many expectant mothers during this pandemic has been passed on to their "COVID babies".

8. Conclusion

With potentially swathes of people reporting subjective psychological trauma and stress as a direct consequence of the pandemic, the knock-on effects on mental health services and on primary remain to be seen. Will there be an increased demand for supports in the longer term and how will these increased needs be met? Cullen and colleagues [52] issue a word of caution when considering how we ought to address mental health in the aftermath of the pandemic: "we neglect mental health at our peril and to our long-term detriment". That said, resilience factors may offset some of the adverse effects of the pandemic and these may be determined by individual personality traits and proactive coping styles. It is also obvious that psychological stress does not invariably become disorder. The challenge is for governments to adapt the wider environment and societal structures to support

resilience and learn from less successful strategies including inadequate, mixed or inconsistent messaging to assist in preparedness for future health crises.

Finally, we should be eternally mindful of the danger of forgetting. When trauma is not discussed, not processed, and perhaps actively forgotten, healing for some is hindered and probably prevented, yet excessive reflection may also potentially be re-traumatising for others. Arguably a sense of complacency and lack of preparedness for future global pandemics would constitute the worst legacy of COVID-19. There is a danger that we will banish the pandemic to the depths of our subconscious, and ignore the need to actively process what has happened to our world and its citizens over the past 2 years. We know that the last pandemic incurred such a fate, with relatively little having been written about it in one hundred years since it ended. We need to consider what steps we may take to facilitate processing the trauma, in the hope that we can eventually learn from it and move past it. As mentioned previously, it has been recommended that frontline workers be formally thanked for their work during the pandemic, that their emotional and psychological wellbeing be preserved, burnout prevented and that their learning and experience be retained to ensure future responsiveness by health systems. We would suggest that a wider societal approach to actively remember the pandemic and those who lost their lives as a result, such as national and international days of remembrance, should be actively considered, lest we forget and fail to derive meaning from what we have been through during the course of this pandemic.

Conflict of interest

The authors declare no conflict of interest.

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